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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/826,375

04/19/2004

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05/20/2008

EXAMINER

NGUYEN, VAN THU T

ART UNIT

PAPER NUMBER

2824

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/826,375	<b>Applicant(s)</b> ATIR ET AL.	
	<b>Examiner</b> VanThu Nguyen	<b>Art Unit</b> 2824	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 12-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04/19/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. This Office Action is in response to Amendment filed on 03/10/2008. Claims 1-11 are examined. Claims 12-17 have been withdrawn.
2. Applicant's arguments, with respect to Drawings and Abstract Objections have been fully considered and are persuasive. The objections have been withdrawn.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-5, 7-8, 10 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,807,188 to Casagrande ("Casagrande").

**Regarding claim 1**, Casagrande discloses a method of reading data in a virtual ground array of memory cells (FIG. 4 shows a memory array with the sources of the memory cells connected to a common potential node  $V_{GM}$ ) comprising:

- sensing substantially simultaneously a state of adjacent memory cells, wherein a bit stored in each cell of said adjacent memory cells through at least a partially shared sensing path (FIG. 4 shows a plurality of semidouble cells, each

comprising two adjacent memory cells M1 and M2 have parallel connection and a shared sense path such as a bit line and a comparator).

**Regarding claim 2**, Casagrande further discloses wherein said sensing substantially simultaneously comprises:

- coupling a sensing circuit to a first source/drain terminal of each cell of said adjacent memory cells (e.g. FIG. 4 shows a comparator 0 coupled to both drain terminals of a semidouble cell connected to bit line BL<sub>00</sub> and word line R<sub>0</sub>);
- setting a voltage at a second drain/source terminal of each cell of said adjacent cells to a read level (e.g. FIG. 4 shows the common potential node V<sub>GM</sub> connected to ground in a read operation in response to signal /WRITE); and
- sensing in a reading direction the state of said adjacent cells (e.g. sensing currents in the semidouble cell).

**Regarding claims 3-5 and 10**, Casagrande also discloses, in FIG. 4, the memory array having a share word line for each semidouble cell (e.g. word line R<sub>0</sub> for the semidouble cell connected to bit line BL<sub>00</sub> and word line R<sub>0</sub>); a share bit line for each semidouble cell (e.g. bit line BL<sub>00</sub> for the semidouble cell connected to bit line BL<sub>00</sub> and word line R<sub>0</sub>); and the sensing circuit coupled to the shared bit line (e.g. comparator 0 coupled shared bit line BL<sub>00</sub>)

**Regarding claim 7**, Casagrande inherently discloses wherein any one of said memory cells stores at least one bit in said charge trapping region (because the memory cells in Casagrande are EEPROM and subjected to programming and erasing).

**Regarding claim 8**, it is clear that if adjacent memory cells store identical data, they will produce identical current when being accessed.

5. Claims 1-4, 6-8, 10-11 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,992,980 to Park et al. ("Park").

**Regarding claim 1**, Park discloses a method of reading data in a virtual ground array of memory cells (see abstract) comprising:

- sensing substantially simultaneously a state of adjacent memory cells through at least a partially shared sensing path (e.g. the grounded column line between adjacent cells being accessed, see abstract)

**Regarding claims 2, 6 and 10-11**, Park further discloses wherein said sensing substantially simultaneously comprises:

- coupling a sensing circuit to a first source/drain terminal of each cell of said adjacent memory cells (e.g. coupling both memory cells 70a and 70b to their corresponding read path circuitry via lines 51 and 52, which are not shared by said adjacent memory cells, see col. 5 ll. 50-56 and FIG. 4);
- setting a voltage at a second drain/source terminal of each cell of said adjacent cells to a read level (e.g. discharge lines 70a to ground, see col. 5 ll. 45-49 and FIG. 4); and
- sensing in a reading direction the state of said adjacent cells (e.g. sensing currents in both memory cells 70a and 70b).

**Regarding claims 3-4**, see FIG. 4 of Park.

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**Regarding claim 7**, Park inherently discloses wherein any one of said memory cells stores at least one bit in said charge trapping region (because the memory cells in Park are EPROM and subjected to programming and erasing).

**Regarding claim 8**, it is clear that if adjacent memory cells store identical data, they will produce identical current when being accessed.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Park in view of U.S. Patent No. 6,975,536 to Maayan et al. ("Maayan").

Park discloses, as applied in prior rejection of claim 1, all claimed subject matter except further limitation as set forth in claim 9.

**Regarding claim 9**, Maayan discloses, in FIG. 1, a virtual ground memory device comprising nitride read only memory (NROM) cells

Since Park and Maayan are both from the same field of endeavor, the purpose disclosed by Maayan would have been recognized in the pertinent art of Park.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to apply the method of reading disclosed in Park for the NROM memory

device in Maayan in order to eliminating the disturbance from/to nearby memory cells during read operation (see Park, col. 2 ll. 24-30).

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to VanThu Nguyen whose telephone number is (571) 272-1881. The examiner can normally be reached on Monday-Thursday, 9:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Elms can be reached on (571) 272-1869. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

May 20, 2008

/VanThu Nguyen/  
Primary Examiner  
Art Unit 2824